Thiabendazole Summary

Uses

- Thiabendazole is a fungicide used to control fruit and vegetable diseases such as mold, rot, blight, and stain. It is used as a post-harvest treatment on citrus and pome fruits, as well as bananas, carrots, potatoes, green beans, sugar beets, avocados, and mushrooms. It is used as a pre-planting application to seeds, such as potato, soybean, wheat, seed peas, chick peas, clover and dry beans. Non-food uses include ornamental bulbs and corms, and reconstituted tobacco.
- Thiabendazole salt (non-crop) is used in paints, adhesives, paper products, textiles, nylon and carpeting.
- Other uses (regulated by FDA) include treatment of roundworms in livestock and humans.

Health Effects

- Thiabendazole has genotoxic potential, which indicates that it may affect genetic material causing uneven distribution during cell division. However, the findings suggest an interaction with non-DNA targets. The Agency has classified thiabendazole as **"likely to be carcinogenic to humans"** by the oral route. This descriptor indicates that the weight of the experimental evidence shows animal carcinogenicity by a mode assumed to be relevant to humans. There is also evidence that thiabendozole may interfere with thyroid-pituitary homeostasis, which involves the disruption of equilibrium between the balance of thyroid and pituitary hormones.

Risks

- **Dietary Risks are above the Agency's level of concern** based upon highly refined acute dietary assessment for infants and children. Chronic dietary risks are not of concern.

- **Drinking Water Exposure** is below the Agency's level of conern. Thiabendazole use on mushrooms does not raise any drinking water concerns because treatment is performed indoors. Treatment to seeds also takes place indoors; however, the treated seeds are later planted in the field, but this practice is not expected to present any significant contamination to either surface water or ground water resources.

- **Residential Risk is not expected to exceed the Agency's level of concern.** The Agency has determined that there is low potential for residential exposure. The low concentrations of thiabendazole in paints, adhesives, paper and carpet greatly reduce the potential for exposure.

- **Aggregate Risk is below the Agency's level of concern**. Acute risk to infants and children from food alone exceeds the level of concern. For other subpopulations, acute aggregate risk shows upper bound estimates of non-occupational exposure (treated carpet) in addition to dietary exposure (food and water) that exceed the Agency's level of concern. Chronic dietary risk estimates include exposure to thiabendazole residues in food and water. However, the non-occupational risk estimates were based on highly speculative assumptions which the Agency believes overestimate exposure.

- **Worker Risk exceeds the Agency's level of concern** from short-term and intermediate-term exposure for the application and post-harvest/post-application use of thiabendazole during manual seed treatment; sorting/packing/culling of fruits and vegetables; and exposure to carpets, textiles or paper. These risks may be mitigated with personal protective equipment such as long sleeve pants, a long sleeve shirt and gloves.

How the Risk Picture May Change

- No changes are expected in the near future since there are no pending outstanding studies awaiting review.